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U.S. Continues Us[illegible] To Boost Farm Trad[illegible]

TAKE PRIDE IN AMERICA

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PERSPECTIVES

Lower prices for wheat and dairy products, reduced Government payments, and higher cash expenses will combine to trim net farm incomes this year, according to economist Robert Dubman of USDA's Economic Research Service.

A 1-percent drop in livestock sales and a 1-percent rise in crop sales will likely lead to total farm cash receipts of $164-$169 billion in 1991. Although the final figure will probably not match last year's record of $167 billion, it should exceed the total in previous years, Dubman reports.

Prices for wheat and dairy products are forecast to average less than those for 1990, and a much smaller wheat crop is expected. Crop receipts for cash grain farmers are projected to decline 2 percent. Receipts are expected to fall 10 percent for dairy farms, but to increase for beef and pork operations. Lower disaster assistance payments and reductions in deficiency payments are expected to decrease total direct Government payments to farmers.

At the same time, farmers' cash expenses will likely range between $124 and $129 billion, up slightly from 1990.

Total net cash income for U.S. farmers could contract by as much as 5 percent this year, Dubman says, but reductions will be unevenly distributed across the country. For example, the net cash incomes of farmers in the Northeast and Midwest will likely fall the most, while those of farmers in the West and South Central regions will not slip as much. Incomes for farmers in the Southeast will hold steady.

Farm and ranch operations that specialize in fruits and vegetables or red meat will likely average higher net cash incomes this year than last, while other types of operations will have unchanged or reduced incomes.

Increased real estate values are raising farmers' asset and equity levels. Farm asset values are forecast to rise 1 to 2 percent above the $838 billion they were estimated to have reached by December 31, 1990. Most of the gain comes from a 1- to 2-percent rise in real estate values. Dubman points out that if inflation remains near the current rates, the forecast implies a decline in the real (inflation-adjusted) value of farm assets.

Returns to farm assets and farm equity from current income are expected to decline by 4 to 5 percent and 3 to 4 percent, respectively, but to remain high by historical standards.

Cash flow after interest (in real 1982 dollars) totaled $41.5 billion last year, and is expected to be about $3 billion lower this year, Dubman explains. This is largely due to the anticipated drop in gross cash income.

— Priscilla B. Glynn

FARMLINE

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FEATURES

U.S. Continues Using EEP To Boost Farm Trade *by Priscilla B. Glynn* 4

The United States continues to rely on the Export Enhancement Program to increase farm product exports and encourage trading partners to work toward freer world trade. The program has had mixed results in meeting these goals, according to ERS research.

Bakers Serve Up a Variety of New Products *by Doug Martinez* 8

America's bakers are busy introducing many new products to meet consumers' demand for bakery goods that combine nutrition with convenience. The rapidly rising number of in-store bakeries and retail outlets are proving stiff competition for wholesalers.

Milling Industry Continues Consolidating *by Doug Martinez* 11

Millers have greatly increased their milling capacity over the past several years, with most of the growth occurring in the size rather than the number of mills. Nevertheless, flour milling remains highly competitive.

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U.S. Continues Using EEP To Boost Farm Trade

For decades, the United States has relied on a variety of programs to promote exports of its agricultural commodities.

"The nation currently attempts to boost exports in four basic ways: reducing prices, facilitating the provision of commercial credit through credit guarantees, providing food aid, and conducting nonprice promotions," explains economist Karen Ackerman of USDA's Economic Research Service.

Export payments, the subject of this article, allow exporters to sell U.S. agricultural products at world prices to counter the effects of U.S. competitors' export subsidies. Both in-kind and cash export payments were used at various times from 1948 through the early 1970's.

The Export Enhancement Program (EEP) was announced in May 1985 and authorized under that year's farm bill, the Food Security Act, to achieve three primary objectives:

The program is used to counter the export subsidies of U.S. competitors.

- to make U.S. commodities more competitive by offsetting subsidies and other "unfair trading practices" of competitors, chiefly the European Community (EC),
- to prompt U.S. trading partners to begin serious negotiations to resolve agricultural trade problems under the auspices of the General Agreement on Tariffs and Trade (GATT), and
- to increase U.S. agricultural exports.

"The EEP was instituted at a time when U.S. agricultural exports had tumbled, surplus stocks held by USDA's Commodity Credit Corporation (CCC) had grown, and financial stress plagued the farm sector," Ackerman states. "The program was designed to help alleviate these problems by making U.S. agricultural exports more competitive."

The EEP was reauthorized under the Food, Agriculture, Conservation, and Trade Act of 1990, and most of its characteristics remain the same as in the 1985 legislation.

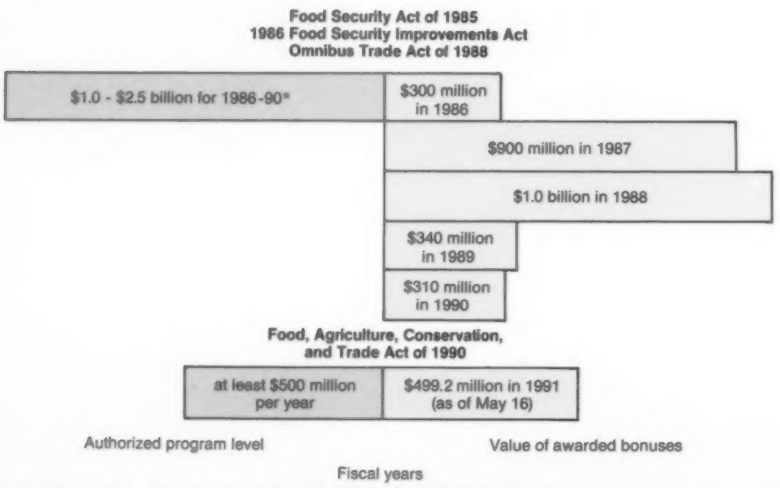
The 1990 farm bill gave the Secretary of Agriculture the authority to use either CCC commodities or cash to "discourage unfair trade practices by making U.S. commodities competitive." EEP bonuses are awarded to exporters in the form of CCC generic certificates. The exporters may then either resell the certificates or redeem them for commodities in CCC inventories (see sidebar).

"Because the EEP was designed to boost U.S. exports by countering the export subsidies of U.S. competitors, the program targets specific markets and products," Ackerman notes. The 1990 farm legislation also retained the EEP as a targeted export subsidy.

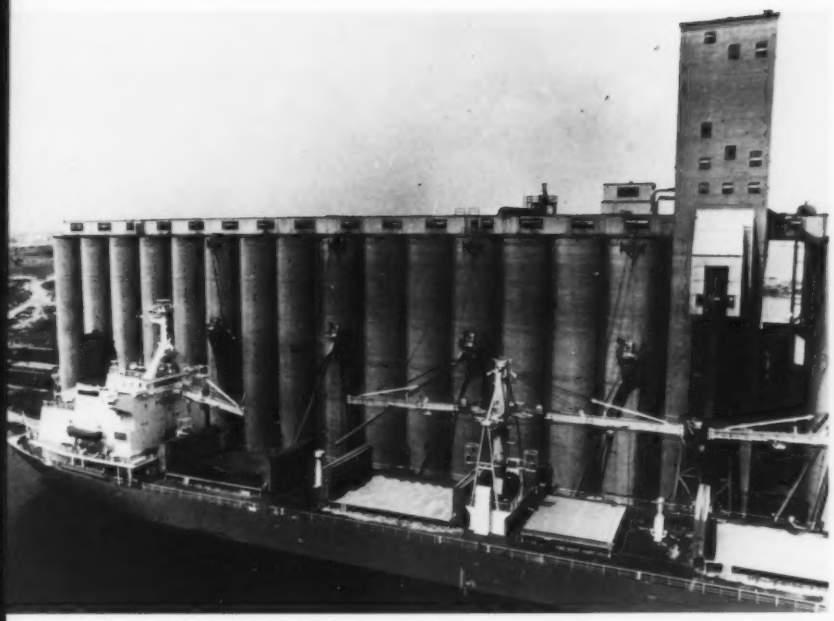
In November 1989, USDA's Foreign Agricultural Service (FAS), which administers the EEP, announced revised guidelines that emphasize the program's trade policy objectives. The program continues to operate under these guidelines:

- All EEP initiatives must support the United States' negotiating strategy in the Uruguay Round of the GATT by countering competitors' subsidies and other unfair trade practices—that is, EEP subsidies should help U.S. exporters displace exports of subsidizing competitors in targeted countries.
- Each initiative should demonstrate the potential to develop, maintain, or expand markets for U.S. agricultural commodities.
- USDA must approve only those EEP initiatives that would have minimal effects on those competitors that do *not* subsidize their exports.

EEP Authorized Program Levels and Bonuses Have Varied With Legislative Changes


Food Security Act of 1985
1986 Food Security Improvements Act
Omnibus Trade Act of 1988
$1.0 - $2.5 billion for 1986-90*
$300 million in 1986
$900 million in 1987
$1.0 billion in 1988
$340 million in 1989
$310 million in 1990
Food, Agriculture, Conservation, and Trade Act of 1990
at least $500 million per year
$499.2 million in 1991 (as of May 16)
Authorized program level
Value of awarded bonuses
Fiscal years

*Appropriations levels set individual year caps of $770 million for 1989 and $570 million for 1990.



- The overall EEP bonus level, and bonuses for individual EEP sales, must be maintained at the minimum levels needed to achieve the anticipated program benefits.

Wheat Is Main EEP Commodity

Since the EEP was established in May 1985, agricultural commodities valued at more than $11.7 billion have been sold under the program, and exporters have received $3.3 billion in bonuses. EEP commodities, in order of their bonus value, are wheat, barley, flour, frozen poultry, dairy cattle, vegetable oils, barley malt, rice, poultry feed, sorghum, table eggs, and semolina (a byproduct of the wheat milling process used for pasta). EEP bonuses to assist wheat sales have accounted for 72 percent of the total EEP bonuses awarded since fiscal 1985, Ackerman reports.

Wheat and flour were the first commodities targeted for EEP sales, and EEP wheat sales have made up between 43 and 66 percent of all U.S. wheat exports from fiscal 1987 through 1990. EEP flour sales peaked at 700,000 tons in fiscal 1986, but were less than 500,000 tons in both fiscal 1989 and 1990.

The United States first offered barley, sorghum, and barley malt under the EEP in fiscal 1986. EEP barley and sorghum sales peaked at 3.5 million tons in fiscal 1987, but dropped to 1.7 million in fiscal 1990. Ackerman reports that although EEP sorghum sales represent only a small portion of all U.S. sorghum sales, EEP sales have accounted for most barley exports in some years.

Sales of other commodities through the EEP have been more sporadic. Vegetable oil sales totaled 104,500 metric tons in fiscal 1989 and 44,500 metric tons in fiscal 1990. Semolina sales were terminated in fiscal 1987, and dairy cattle the following year.

Sales of the 12 EEP commodities have been largely targeted to importers in North Africa and the Middle East. The Soviet Union and China have also been large buyers of wheat under the EEP. Since the program's inception, 112 initiatives have been announced for 78 countries.

The dollar value of EEP bonuses increased during the first 3 years of its operation, but declined in fiscal 1989 and 1990. "The bonus levels vary with market conditions and the degree of foreign competition for those markets," Ackerman notes.

The Current Sales Picture

As of May 16, 1991, commodities valued at close to $1 billion had been sold under the EEP during the current fiscal year—down almost 50 percent from the same period a year earlier because of lower world wheat prices and slower sales of wheat and some other EEP commodities. However, higher wheat bonuses of more than $40 a ton have boosted the total fiscal 1991 EEP bonus level to almost $500 million.

EEP wheat sales totaled 10.9 million tons as of mid-May, down slightly from last year, with higher sales to Algeria, Morocco, the Philippines, Tunisia, and Yemen partly offsetting diminished sales to Iraq and the USSR. China has bought the most wheat under the EEP so far this fiscal year, with purchases of 3.7 million tons, but still has a balance of 48,000 tons available under the program. Soviet wheat purchases as of May 17 (2.1 million tons) were down almost 30 percent from the same period a year earlier, due to a bumper domestic crop, financial constraints, and intense foreign competition for this market.

EEP sales of flour, frozen poultry, vegetable oils, and rice are up from last year, but sales of barley are down.

Evaluating the EEP's Effectiveness

How effective has the EEP been in challenging competitors that subsidize their exports, in encouraging U.S. trading partners to engage in serious negotiations to overcome agricultural trade barriers, and in boosting U.S. agricultural exports?

ERS research credits the EEP with increasing U.S. wheat exports more in some years than others. "Several factors influence the effectiveness of the EEP in boosting ex-

How the EEP Works

Proposals for countries and commodity markets to be targeted under the EEP originate with foreign governments, private importers, U.S. agricultural interests, USDA program specialists, and other parties. USDA first evaluates the proposal based on the program criteria. Once approved, the proposal is presented to an interagency group, the Trade Policy Review Group, for review. Upon USDA announcement of a new initiative, importers in the targeted country may tender for a specified quantity of the designated commodity.

After the country tenders for the designated commodity, exporting firms bid for the sale. After arranging sales which may be contingent on receiving a CCC bonus, the exporting firms then compete against one another for the bonus.

The firms estimate the per-unit subsidy they will need in order to sell the commodity at the price stipulated in the negotiation. The firms submit their bonus bids and sales prices to the CCC, which accepts or rejects them.

The CCC accepts exporters' bids on the basis of price and bonus ranges established by USDA. If the CCC rejects a firm's bid, the firm may revise and resubmit it.

After completing the sale, the selected exporter or exporters present proof of the commodity's export to the CCC, and in return receive the bonus in the form of certificates redeemable for CCC commodities. The exporters may then resell the certificates or redeem them for any commodity available from CCC inventories.

ports," Ackerman observes. "The choice of targeted countries is important because some will increase their wheat imports more than others in response to lower EEP prices. Competitors' reactions to the program count, too."

Market conditions also play a large part in determining the EEP's effectiveness. "The program serves as a better tool for expanding exports when U.S. supplies are large and competition for markets is fierce," Ackerman explains. "Those conditions prevailed during the 1986/87 crop year (June through May), the time when ERS studies indicate the EEP had its greatest impact on wheat exports."

ERS research recognizes that other factors contributed to the export gains as well. These include the lower U.S. loan rate for wheat, which reduced wheat prices at home and abroad, higher Soviet and Chinese wheat imports, lower (and poorer quality) supplies of other major exporting nations, and the depreciation of the dollar, which made U.S. products more affordable.

Expanded exports through the EEP can increase export revenues and domestic wheat prices. Two ERS studies indicate that the program slightly raised domestic wheat prices when enhanced exports overcame the price-dampening effects of releases of CCC stocks awarded as EEP bonuses. Higher domestic wheat prices can improve the market earnings of wheat growers who do not participate in the Federal price support program, and reduce Government outlays for deficiency payments to participating producers.

How effective has the EEP been at countering competitors' subsidies and other unfair trade practices? ERS analysts have found that EC export restitutions for wheat rose from $365 million in 1985 to $1.8 billion in 1988. "The EEP, lower U.S. loan rates, and the dollar's depreciation relative to the European currency unit forced the EC to lower the price of its wheat exports to continue to compete," Ackerman remarks. "At the same time, the EC had to make larger restitutions to its exporters to compensate them for their lower sales receipts."

Has the EEP encouraged our trading partners to negotiate for a freer world trading environment? Although the EEP's growth has coincided with the Uruguay Round, Ackerman cautions that it is difficult to assess the program's role in furthering the negotiations. However, at the time the EEP was initiated, there was no formal agreement that agricultural issues would be addressed in the multilateral trade negotiations. The EEP has contributed to the attention given to agriculture in the Uruguay Round.

The EEP's Future

The United States will continue to use the EEP to "discourage unfair trading practices by making U.S. agricultural commodities competitive." The 1990 farm bill stipulates that the CCC must make a minimum of $500 million in funds or commodities available each year from 1991 through 1995 to carry out the program.

However, lawmakers' concerns about the budget may limit annual EEP appropriations. The Rural Development, Agriculture, and Related Agencies Appropriations Act of 1991 originally capped EEP funding for fiscal 1991 at $425 million. By late March, most of this funding was exhausted, and on April 10, President Bush signed the Dire Emergency Supplementary Spending Act, which included a provision to remove this year's cap on the EEP.

Congress authorized additional funding for various export programs in the Omnibus Budget Reconciliation Act of 1990. Lawmakers expressed their concerns about the progress of the GATT negotiations by requiring the Secretary of Agriculture to in-

crease export program funding by $1 billion a year in fiscal 1994 and 1995 if an agreement on agricultural trade reform is not reached by June 30, 1992.

The 1990 farm bill also includes a provision instructing the Secretary to establish an objective to spend at least 25 percent of EEP bonuses (or 25 percent of the value of the commodities sold under the program) to promote high-value agricultural commodities and value-added products under an export bonus program.

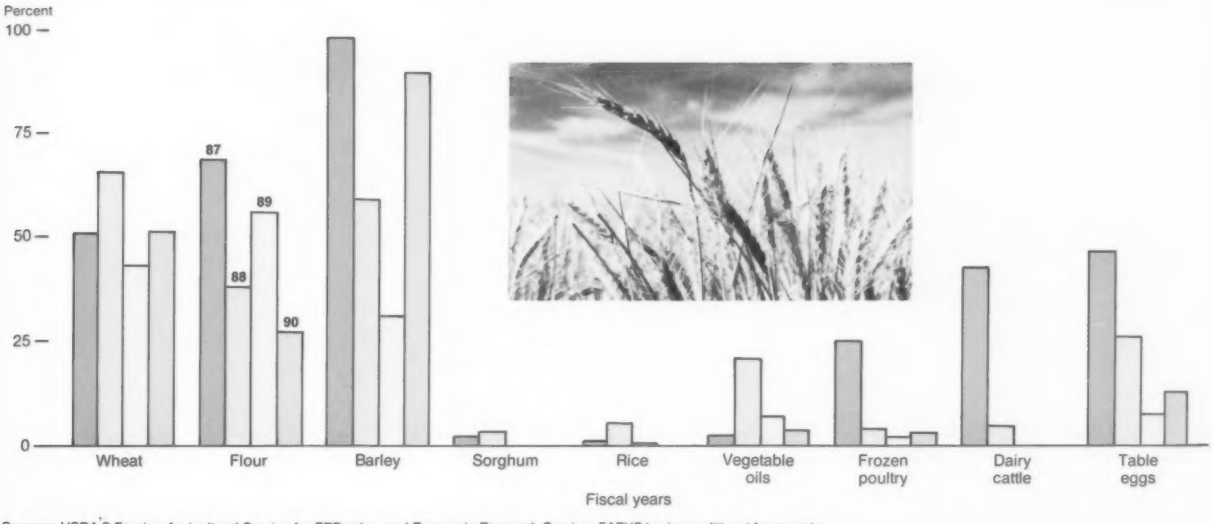
Although wheat and other grains make up the bulk of the commodities sold under the EEP, smaller quantities of value-added products such as flour, barley malt, vegetable oils, and table eggs (a high-value unprocessed commodity) have also been sold. Ackerman reports that since the program was established, EEP bonuses for value-added and high-value products have totaled 18 percent.

"Some contend that processed products are good candidates for EEP bonuses because the EC subsidizes sales of processed as well as bulk commodities," Ackerman explains. "Increased sales of such items also could benefit the U.S. industrial sector, and so help to maintain or increase employment."

But targeting processed products under the EEP can be expensive. For instance, when the EEP was used to increase frozen poultry exports in 1987, the sales bonuses averaged 40 percent of the product value. □

[Based primarily on information provided by Karen Ackerman, economist, Commodity Economics Division, Economic Research Service.]

EEP Sales as a Share of Total Exports of Targeted Commodities Have Also Fluctuated



Sources: USDA'S Foreign Agricultural Service for EEP sales, and Economic Research Service, *FATUS* (various editions) for exports.

Bakers Serve Up a Variety of New Products

Bakery products are practically tumbling out of the nation's commercial ovens as producers scramble to meet consumers' desires for convenience, service, and variety.

"Bakers are continuing to introduce many new products to meet increasing demand," says economist Joy Harwood of USDA's Economic Research Service. "In 1989 alone, manufacturers launched 1,155 new items."

Many consumers, she says, simply prefer to buy rather than bake. Others are motivated by healthful eating.

"All industry segments have tapped into this trend," says Harwood, "meeting the interest in whole wheat breads and oat bran muffins. Bakers are also now focusing on 'lite' (low-calorie) breads and 'low-salt' crackers. New fat substitutes and formulas that eliminate fats have spawned a tide of 'no-fat, no-cholesterol' products."

According to some industry analysts, Harwood says, the fresh products of in-store bakeries (located mainly in supermarkets, department stores, and convenience stores) and retail outlets (like Mrs. Fields and T.J. Cinnamons) pose serious competition for the prepackaged products of wholesalers.

In-store bakeries and retail outlets mean serious competition for wholesale producers.

"However, consumers often purchase goods on impulse at in-store and retail outlets," says Harwood. "These impulse purchases may not, over time, erode the market share of wholesalers."

Reassessing Methods

But the rapid growth of supermarket in-store bakeries has caused wholesalers to re-examine their products and marketing methods, says Harwood. "The number of in-store bakeries increased from 18,200 in 1986 to just over 23,000 in 1990. They generated almost $8 billion in sales in 1990, up from $4.9 billion in 1986. The top-ranked in-store bakery company—Winn-Dixie, Inc.—operated 1,117 units in 1990."

In response, wholesalers have tried to exploit the promotional efforts used by in-store bakeries. Items that have been successful at in-store bakeries—such as specialty items and single-serve units—are now being marketed in prepackaged form by wholesalers.

"The growth in retail bakeries has also heightened competition," says Harwood. "These bakers, who are often franchisees, tend to do well in shopping malls, near commuter stations, and in business districts. They vary from multi-unit enterprises to 'mom and pop' stores, and from full-line bakeries to specialty cookie shops."

Overall, the number of retail bakeries grew from about 16,000 in 1981 to 23,000 in 1990—a 44-percent increase in less than a decade. In 1990, retail bakeries did about $5.7 billion in business, slightly higher than in 1989.

"In addition, foodservice outlets have also sharpened competition," says Harwood. "These outlets sell large quantities of sandwiches, with breads, buns, and rolls a major component, and run the gamut from fast-food units to upscale cafes. One industry source estimates that foodservice bakery sales (from those baking on-premise or receiving products from commissaries) were $8.7 billion in 1990, an increase of 5 percent over the previous year."

Foodservice outlets pose a special challenge to other types of bakery merchandisers. Sandwich breads and rolls are a favorite of consumers at rapidly growing take-out restaurants, largely because sandwiches are easy to handle, quickly prepared, fairly inexpensive, and perceived as "light fare."

"As evidence of this market's growth, a National Restaurant Association survey of 50 menus found that the number of sandwiches listed jumped 55 percent between 1984 and 1989," says Harwood. "Competition from take-out restaurants has concerned many supermarket chains and bakery operators. One trade magazine reports that the turf battles have become so intense that 'both supermarket and foodservice operators publicly complain that they perceive each other as threats.' "

The Top Ten In-store Bakery Companies

Rank	*Company*	*No. of in-store bakeries*
1	Winn-Dixie Stores, Inc.	1,117
2	Kroger Food Stores	946
3	Great A&P Food Stores	716
4	Safeway Stores, Inc.	575
5	American Stores Companies	513
6	Albertson's, Inc.	447
7	Publix Supermarkets, Inc.	336
8	Food Lion, Inc.	255
9	Grand Union, Inc.	155
10	Vons Companies, Inc.	154

Sources: Joy Harwood, USDA's Economic Research Service, and industry sources.

Many Wholesale Bakers Focus on Specialties

Wholesale bakers generate most of the baking industry's sales, selling mainly to food retailers and food service companies. These bakers account for about 56 percent of all bakery sales.

Typically, wholesale baking plants are rather specialized. Most factories produce mainly bread and cake items (2,357 plants operating nationally in 1987) or cookie and cracker products (380 plants). Bread-type products have a shorter shelf-life than cookies and crackers. Consequently, the bread and cake industry is largely composed of local plants close to population centers.

"Within each industry segment, there are variations in the items produced," says ERS economist Joy Harwood. "For instance, many plants in the bread and cake industry manufacture only a few distinct products, such as breads and rolls. A few plants make a wider variety of items. For example, one New York plant produces over 19 different items, ranging from bagels to pies and ice cream cones."

Still, many bread and cake factories continue as single-plant, family-owned businesses with fewer than 20 employees. Plants in this size category made up 56.3 percent of all plants in the wholesale bread and cake industry in 1987, but only 2.3 percent of sales. Restricted by limited access to capital, many single-plant bakeries have found that the gains of geographic expansion are more than offset by the costs of refrigerated shipments and the potential for spoilage.

"This situation means that large, multiplant wholesalers are important in contributing to industry sales," says Harwood. "Some of these operations—better able to bear the costs and risks of large-scale enterprises—have developed into major businesses. For instance, Continental Baking, the largest bread and cake wholesaler in 1990, operates nationally. But several of the largest bread and cake wholesalers sell their products only in certain regions."

In contrast, cookie and cracker manufacturers don't have to worry as much about spoilage. They've found that the economies of scale associated with long production runs surpass the advantages of plant dispersion. Although plants with fewer than 20 workers represented 49.7 percent of all plants in 1987, they accounted for just 1.5 percent of total sales.

"The large cookie and cracker companies have fewer plants and a more national focus than the large bread and cake firms," says Harwood. "For example, Nabisco, the largest cookie and cracker manufacturer in the United States, receives at least 15 percent of its annual sales from each geographic region."

But ownership of wholesale bakeries—regardless of whether the companies bake breads, cakes, cookies, or crackers—has evolved in the past 30 years as food processors have acquired baking companies. Within this time period, control of every major wholesaler, with one exception (Flowers Industries), has changed.

"As elsewhere in food manufacturing, many of the changes that occurred in the 1980's involved purchases by large, diversified companies," says Harwood. "For instance, Kohlberg, Kravis, Roberts acquired RJR Nabisco, Inc., parent of Nabisco Biscuit Company." Also during this time, Pepperidge Farm, Inc., became a division of Campbell Soup, Inc.; Entenmann's, Inc., a part of Kraft-General Foods; and Sunshine Biscuits, Inc., an operation of G.F. Industries, Inc., a California-based baking company.

Such acquisitions and mergers have enhanced the financial and marketing resources of the wholesale baking industry.

"Because many acquiring companies have substantial resources, they can channel large amounts of capital into product development and engage in the advertising necessary to establish and maintain brand loyalty," says Harwood. "In addition, the packaging and product technologies of newly formed companies have likely accelerated the pace of new items entering the market."

Seeking Market Niches

Harwood goes on to explain that in an industry shifting its focus from selling quantity to providing variety, small baking companies—whether wholesalers or retailers—must seek out narrow market niches. Providing distinctive products will probably enhance the profitability of both small operations and large national companies.

Another issue is also economic, but in a far different sense.

"Bakers are beginning to feel squeezed by environmental concerns," says Harwood. "One recent target has been the smog-producing ethyl alcohol released during the leavening process. As an example, Southern California's South Coast Air Quality

Management District Board ordered—by unanimous vote in January of this year—that 24 large commercial bakeries install smog controls on their ovens. By one reliable estimate, the 72 ovens produced almost as much smog as a single oil refinery."

Another area of ecological concern is packaging.

"An image of excess packaging poses a potential problem for bakers," says Harwood. "Plastic or aluminum foil prevents spoilage of baked goods. To help combat consumer doubts about excess packaging, programs are emerging to recycle bakery wrappers." □

[Based largely on information provided by economist Joy Harwood, Commodity Economics Division, Economic Research Service.]

Milling Industry Continues Consolidating

Growing concentration continues apace in the U.S. flour milling industry, and some millers have increased both market share and milling capacity.

"Several of the largest flour milling companies more than doubled their mill numbers and daily capacities between the early 1970's and 1990," says economist Joy Harwood of USDA's Economic Research Service. "However, many in the industry agree that flour milling remains highly competitive."

Pushing this growth is the strong domestic demand for flour. Per capita consumption of flour has grown by an average of more than 1 pound per year since 1970, rising 27 pounds from 1970 to 1990.

"One reason is the interest in healthy eating and convenience," says Harwood. "Consumers have been boosting their consumption of fiber, bran, and whole grains. At the same time, they are buying more highly processed convenience foods—like sandwiches, pizzas, pastas, and tortillas—which often contain large amounts of flour."

Although new plants have been built to meet this demand, most of the industry's growth has been in the size of plants, not in mill numbers. In fact, overall mill numbers have dropped. Total wheat flour and durum mill numbers fell from 292 in 1973 to 219 in 1990.

Economies of Scale

"The decline in mill numbers reflects a long-term trend toward consolidated production," says Harwood. "Economies of scale in processing and transportation are largely responsible for this trend."

As the number of mills has fallen, the average capacity per mill—as well as total industry capacity—has increased. Total industry capacity increased 28 percent between 1973 and 1990, and average mill size rose 70 percent. The largest mills (with over 10,000 hundredweight daily capacity) accounted for 54 percent of total capacity in 1990, up from 35 percent in 1973.

Growth in per capita flour consumption has averaged more than 1 pound a year since 1970.

"Millers indicate that, within limits, plant capacity can be enlarged at a less-than-proportionate increase in energy and equipment costs," says Harwood. "Per unit labor costs can drop sharply with larger output because the size of operating crew required for a larger plant is comparable to that for a smaller one. And unit transportation costs can fall if larger mills are able to negotiate lower rates on the basis of volume than their smaller counterparts."

With the largest milling firms expanding their holdings, concentration in the industry has increased substantially. In 1990, the top 12 companies owned about 80 percent of all milling capacity, up from 68 percent in 1973. They owned 108 wheat flour and durum mills in late 1990, accounting for about 50 percent of all U.S. flour mills. The top 12 companies own all but one of the U.S. flour mills with 10,000 hundredweight or more of daily capacity.

"The top four firms—ConAgra, ADM, Cargill, and Pillsbury— collectively increased their market share at a fast pace in the 1980's," says Harwood. "As a group, they owned about 58 percent of all industry capacity in 1990, up from the 33.5 percent held by the top four firms in 1973."

"Ownership of many flour milling companies has changed in the past 20 years," Harwood says. "Many of these acquisitions have been made by firms that have sizable agribusiness interests."

The reasons behind these milling acquisitions are not always clear. By expanding their plant holdings, and in certain cases, controlling several stages in the commodity processing and food manufacturing process, some companies may be able to improve their profitability through cost reduction. They may be able to negotiate lower transport rates, improve scheduling, and spread production, marketing, and financial risks over a larger volume of activity.

"A greater number of plants held by a company does not, however, necessarily assure lower costs and higher profits," says Harwood. "Discussions with milling company executives and industry officials suggest that less intrabusiness use of procurement economies occurs than might be expected. Different operations are commonly treated as competing profit centers, with corporate goals that may be incompatible."

"In recent years, several agribusiness firms have sold off a substantial number of their flour mills," Harwood says. "For instance, International Multifoods, Inc., sold all of its flour mills to ConAgra—the No. 1 milling company in size—in the late 1980's. And in January of this year, Pillsbury announced that it had reached an agreement to sell four of its eight flour mills to Cargill. The trend toward consolidated production and greater concentration appears to be progressing steadily."

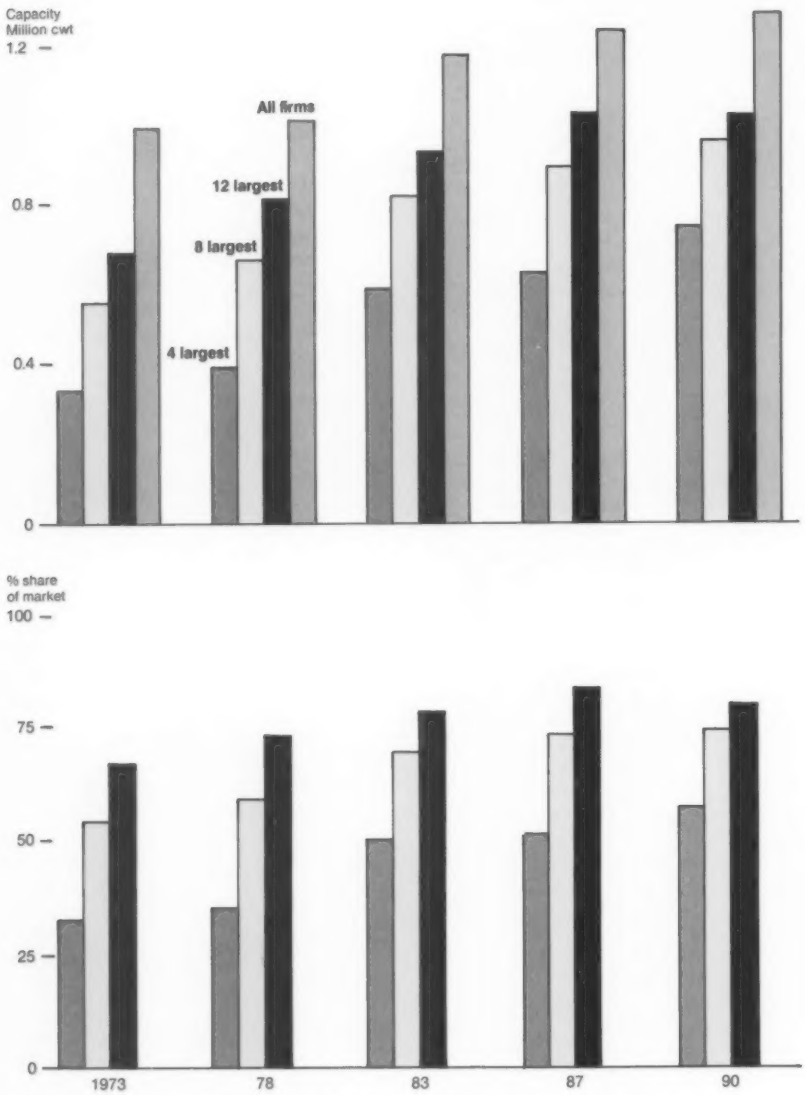
Despite greater concentration, flour millers remain fiercely competitive. "Millers often appear to treat flour as a very price-sensitive product, believing that the lowest price, highest volume operation gets the business," Harwood says.

She cites three examples that provide some evidence of this:

- The milling margin, at $2.05 in January 1991, was lower than most of the margins calculated in the 1980's, and more than 25 cents less than the margin in mid-1986. (The milling margin is the sum of bakery flour and millfeed prices per hundredweight of flour produced, less the cost of the wheat needed to produce a hundredweight of flour.)

- The cost of the wheat needed to produce a hundredweight of bakery flour (Kansas City standard patent) averaged $6.45 for

Concentration of Milling Capacity Has Increased Substantially in the Last 20 Years Among Wheat Flour and Durum Mills



Source: Joy Harwood, USDA's Economic Research Service.

January 1991, about the same as the cost in mid-1986.

- The mid-month price of bakery flour in January 1991, at $7.05 per hundred-weight, was the lowest since the 1970's and about a third below prices in the early 1980's.

"Going back in time, the milling industry has been quite competitive," says Harwood. "For instance, one industry study stated that net income (after taxes), as a percent of sales, ranged from -0.11 to 3.28 percent for major milling firms between 1977 and 1982. For diversified firms, the study found that the earnings of flour milling divisions were lower than the total companies' average earnings."

Some industry officials have encouraged millers to focus on quick and accurate responses to bakers' needs, consistent product quality, and development of market niches. And some observers have noted a greater effort at innovation, segmentation of markets, and greater cost-effectiveness.

A New Challenge

In the 1990's, the industry will likely shift more emphasis to improving the consistency of flour performance.

"Some baking analysts contend that the baking performance of flour has dropped substantially in the past 25 years," says Harwood. "This is one of the most pressing current issues in the milling and baking industries."

Several findings substantiate the impression that flour performance has declined.

For example, one baking company executive reported in 1975 that more than 96 percent of the company's bake tests (which summarize grain, texture, feel, and color) yielded an acceptable bake score. By 1987, less than 50 percent of all flour met their requirements, and in 1989 it was less than 15 percent. Over this period, the company used the same equipment and the same method and formula. In addition, the same individuals had performed the bake tests since 1973.

Certainly, the relationship between laboratory tests and flour performance is a complex issue. In the first place, laboratory tests differ in importance to different types of

bakers. Laboratory tests appear to be a special issue for soft wheat bakers, who produce a wide variety of cookies, crackers, cakes, and pastries. Secondly, Harwood says, laboratory tests do not necessarily reflect conditions in the production plant. Two lots of flour with the same laboratory analysis rating can bake quite differently. At times, tests show virtually no correlation between lab analysis and baking performance.

Industry analysts indicate that several factors—including genetics and the proliferation of wheat varieties—may have contributed to the change in flour performance.

"Farmers encouraged breeders to produce higher yielding varieties that resisted disease," says Harwood. "Breeders focused on higher yields, with less emphasis given to the end product performance of flour. Wheat varieties that represented 85 percent of 1986's acreage planted in Kansas did not exist in 1977. The varieties planted in 1977 likely had better baking characteristics."

Moreover, she says, increased irrigation and fertilization of wheat may have reduced flour performance. And changes in milling practices may have been a factor.

Harwood notes that the decline in performance in the 1980's occurred in conjunction with a decline in the average protein content in wheat. However, protein quality is as important as protein quantity. □

[Based primarily on information provided by economist Joy Harwood, Commodity Economics Division, Economic Research Service.]

USDA Studies Cotton Producers' Chemical Use

A study of chemical use and production practices on cotton farms in 14 States found that a potential for nitrates to leach into ground water and possible losses of pesticides to surface water are the most widespread water quality concerns which could be associated with cotton production.

The pilot project surveying cotton production was conducted under the President's Water Quality Initiative, a multi-agency effort in the Federal Government.

The survey showed that, in 1989, 83 percent of the acreage was treated with herbicides, 82 percent was fertilized with nitrogen, and 67 percent was treated with insecticides.

The chemicals used by cotton growers include fertilizers to enhance plant yield and quality, herbicides to control weeds, insecticides to control insect pests, and defoliants to aid in harvesting.

Economist Stephen Crutchfield of USDA's Economic Research Service, who worked on the economic analysis of the survey data, said the study covered 95 percent of U.S. cotton cropland—about 10.5 million acres in 14 States.

USDA officials note that there has been increased concern in recent years in Congress and throughout the country about water quality, and that is a basis for the President's Water Quality Initiative.

"There is concern that agricultural chemicals can end up in wells or reservoirs, thus presenting a health risk to people who drink the water," an official said. He added that there is also concern that fish could be harmed by chemicals that get into lakes and streams.

Crutchfield and other ERS economists analyzed the survey data to identify acreage where conditions indicated a potential for chemicals used in cotton farming to leach into ground water or leave the field through soil erosion and runoff into lakes and streams. Factors thought to contribute to chemical loss include the use of leachable chemicals, high rates of soil erosion, and porous or sandy soils.

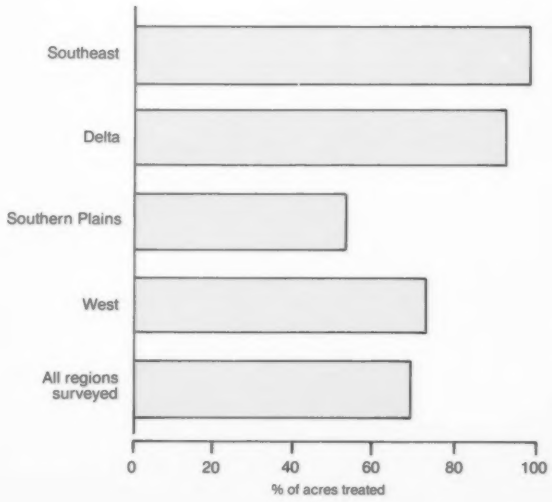
Results of this preliminary analysis indicate that much of the surveyed acreage showed a potential for pesticides applied to cropland to leave the field attached to eroding soils or dissolved in runoff. About one-third of the surveyed acreage was estimated to be potentially vulnerable to nitrates leaching into ground water.

Cotton production appears to be less likely to result in pesticides leaching into ground water or to be associated with surface water impairments from soil erosion.

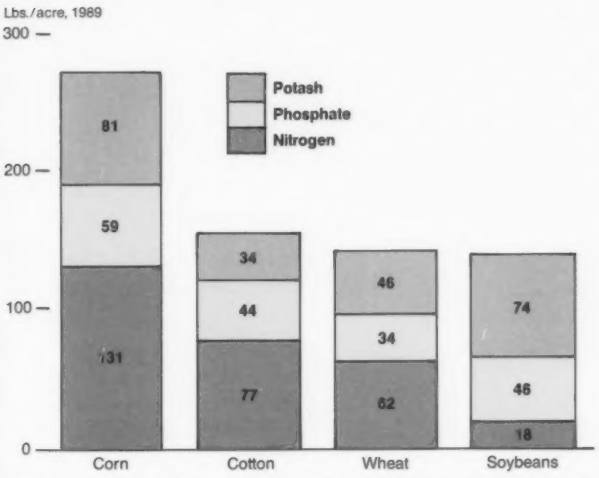
The survey covered chemical use practices and the potential for chemicals used to leave the field through leaching, soil erosion, or runoff–not the actual impact of those practices on water quality. The survey did not gather data on the amount of chemicals that might be found in water supplies.

Additional research is under way to evaluate the economic impacts on cotton farmers of alternative policies to protect water quality, including reduced input use, land retire-

Insecticides Were Used on 68 Percent of the Total Cotton Acreage Surveyed in 1989



Cotton Is Fertilized Less Than Corn, But More Than Wheat and Soybeans



Source: Cotton data are from the survey. Wheat, corn, and soybean data are from *Agricultural Resources: Inputs Situation and Outlook Report*, February 1990.

ment, and soil-conserving farming systems. Experience gained from the collection and analysis of the cotton water quality survey data will be applied in 1991 to assess the environmental impacts of agricultural chemical use on other crops, including vegetables and selected field crops.

— Wendy Pinchas

[Based primarily on information provided by Stephen Crutchfield, Resources and Technology Division, Economic Research Service.]

U.S.-Canada Trade Pact Affects Agriculture Slightly

The U.S.-Canada Free Trade Agreement (FTA) has had only modest measurable effects on United States agriculture. Nevertheless, the agreement has provoked unexpected policy changes on both sides of the border.

"The FTA brightened the trade picture somewhat for the United States in 1989 and even more in 1990, especially regarding agriculture," says economist Carol Goodloe of USDA's Economic Research Service. "But its repercussions were most apparent on policymaking."

The agreement went into effect on January 1, 1989. It was designed to boost trade. Its agricultural provisions called for the removal of some trade barriers, primarily tariffs, that restricted imports.

For 1989, trade data show a 12.5-percent increase in U.S. agricultural exports to Canada and an even greater rise in imports. However, attributing the trade expansion in 1989 solely to the FTA is difficult since the 1988-89 drought in North America also influenced trade. U.S. farm exports to Canada grew faster in 1990 than the year before, even though U.S. agricultural exports as a whole declined slightly. U.S. agricultural exports to Canada increased at a faster rate than Canada's farm exports to the United States.

A significant impact of the FTA may involve U.S. countervailing duty laws, which have been a major issue in U.S.-Canadian agricultural trade.

In September 1989, the United States placed a countervailing duty on Canadian pork to protect U.S. pork producers against what they considered unfair trade practices. But a recent decision under the FTA may change this ruling.

Canada sought to have the countervailing duty removed

by petitioning a dispute settlement panel, which was established under Chapter 19 of the FTA to handle such trade disagreements. In February 1991, following a ruling by the dispute panel, the International Trade Commission reversed an earlier decision that said no harm was done to U.S. pork producers.

But the U.S. Trade Representative appealed the ruling under the "extraordinary challenge" provision of Chapter 19, which means a new committee was formed to review the decision. In June, the committee let stand the earlier decision that Canadian subsidies have not harmed U.S. producers. The United States will have to remove the duty and return all previous duties to Canada. Rulings such as this one could set precedents for future actions, she says.

The FTA has also had a significant impact on the Canadian Wheat Board (CWB), the most powerful institution in Canadian agriculture and a powerhouse in world grain trade.

The United States has long objected to the Board's monopoly over wheat exports and to its pricing policies. The FTA has put pressure on the CWB to reveal its sales prices and to remove licenses for grains.

Under the FTA, import licenses for wheat came off in May, says ERS economist Mark Simone, because U.S. Government support for wheat was less than that of Canada, based on average support for the past 2 years. In anticipation of license removal, Canada has modified its pricing of domestic wheat to a more market-oriented system.

Canadian quotas on dairy products have also come in for scrutiny under the FTA, Goodloe says. Most dairy products in Canada are subject to import quotas or licensing requirements. But yogurt, ice cream, and some other products were not covered. However, within 2 months after the FTA was initiated, Canada began requiring import licenses on various dairy products, presumably because Canadian producers feared competition from lower priced U.S. imports, she says.

The United States protested the action before the General Agreement on Tariffs and Trade, which ruled against Canada. So far, Canada has refused to change its dairy policies, Goodloe says.

"The FTA appears to be having a greater impact on Canada than the United States," Simone says. And not only because bilateral trade is far more important to Canada than to the United States, but because the FTA has put tremendous pressure on Canada to change how some of its institutions, such as the CWB, operate.□

— Wendy Pinchas

[Based primarily on information provided by Carol Goodloe and Mark Simone, Agriculture and Trade Analysis Division, Economic Research Service.]

U.S. Agricultural Exports to Canada Expanded In 1989 and 1990

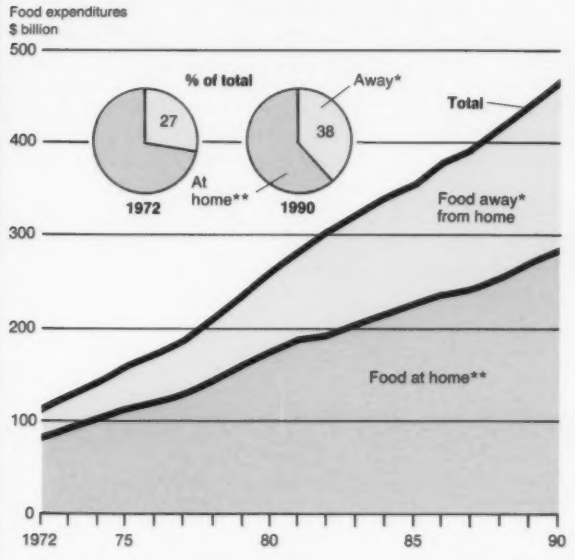
Item	1988	1989	1990	Change from 1988 to 1989	Change from 1989 to 1990
	$ billion			*Percent*	
U.S. exports	308.0	349.6	394.0	13.5	12.7
U.S. agricultural exports	37.1	40.0	39.3	7.8	-1.75
U.S. exports to Canada	70.3	73.9	83.9	5.1	13.5
U.S. agricultural exports to Canada	3.2	3.6	4.2	12.5	16.7
Canadian exports	117.7	115.4	118.8[1]	-2.0	2.9
Canadian agricultural exports	8.3	7.4	8.1[1]	-10.8	9.5
Canadian exports to U.S.	81.8	84.7	91.4	3.5	7.9
Canadian agricultural exports to U.S.	2.4	2.9	3.2	21	10.3

[1]Preliminary.
Sources: Economic Research Service, United Nations trade data, and Agriculture Canada.

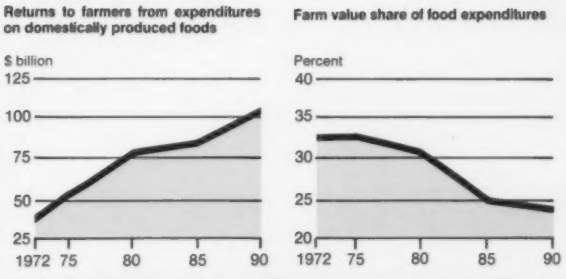
Food Spending and Prices Rise, But Americans' Share of Income Spent on Food Declines

Data were provided by Denis Dunham of the Commodity Economics Division, Economic Research Service.

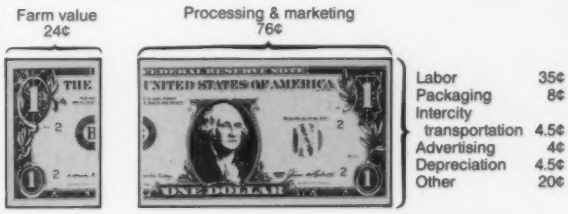
America's Food Bill Came to $465 Billion in 1990, With 38% of That Total Spent on Eating Out



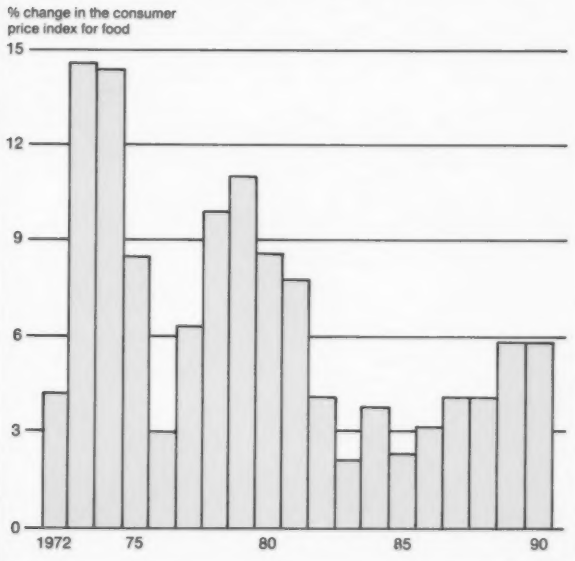
With Higher Food Spending, Farmers' Returns Have Increased, and the Farm Share of the Food Dollar Has Held Steady Since 1987



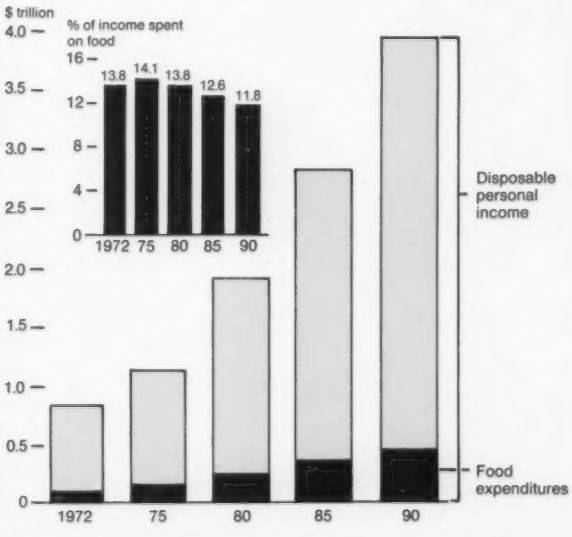
Dividing Up the 1990 Food Dollar



Retail Food Prices Have Climbed an Average of 6.5% a Year Since 1972, and Increased 5.8% in 1989 and 1990



Americans Continue to Spend a Decreasing Proportion of Their Income on Food, Thanks to Increasing Personal Income

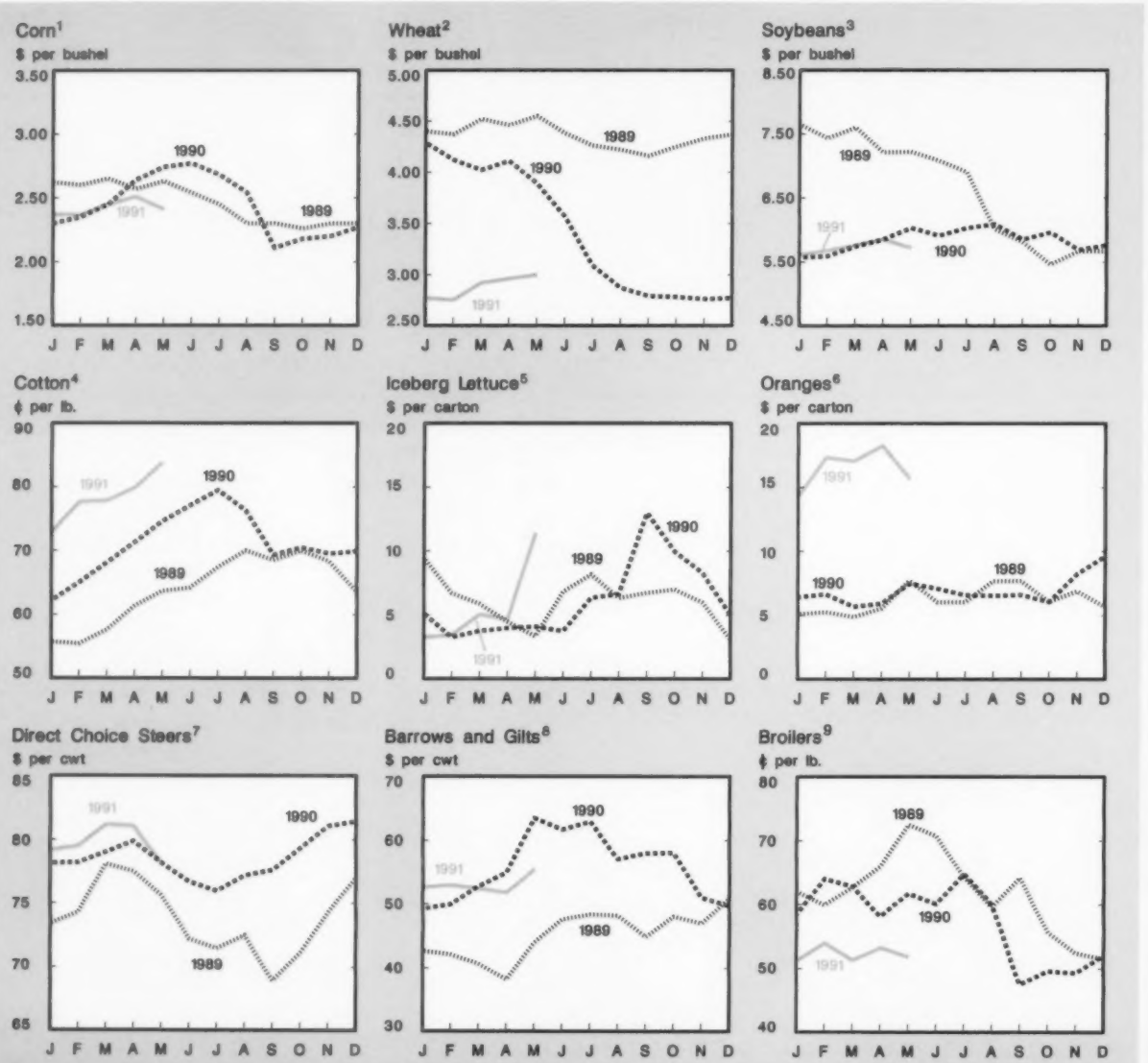


*Purchases from restaurants and other eating places; excludes food paid for by government and business.
**Food purchased from grocery stores and other retail outlets primarily for consumption in the home; excludes government-donated foods.

FARMLINE TRENDS

Monthly Price Monitor

USDA's May 1991 inflation-adjusted index of farm prices was 2% above April but 1.3% below its year-earlier level. Corn dropped 10¢ to $2.41 per bushel, while soybeans were down to $5.72. Wheat was up 4¢ to $3.00 per bushel. Cotton rose 4¢ to 83.9¢ per pound, the highest since February 1981, when it matched that average. Iceberg lettuce jumped to $11.41 per carton due to temporarily short supplies, according to the Agricultural Statistics Board. California oranges decreased to $15.69 per carton, down $2.58. In the meat animals area, direct choice steers were $78.15 per cwt, the lowest average since last September. Barrows and gilts, at $55.44 per cwt, rose to the highest level since October. Broilers declined to 51.8¢ per pound.



[1]No. 2 yellow, Central Illinois. [2]No. 1 HRW, Kansas City. [3]No. 1 yellow, Central Illinois. [4]SLM 1-1/16", spot market price. [5]Standard carton 24's, California-Arizona. [6]Central California, Standard carton. [7]Nebraska. [8]Omaha. [9]Wholesale, New York. All prices shown are monthly averages.

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